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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,749	07/15/2003	Shan Cong	5701-01293	9001

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EXAMINER

ALSOMIRI, ISAM A

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,749

Applicant(s)

CONG ET AL.

Examiner

Isam A Alsomiri

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-28 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-28 is/are allowed.
- 6) ☒ Claim(s) 32-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement(s) (IDSs) submitted on (October 17, 2003) and (April 1, 2004) have been considered by the examiner.

The information disclosure statement (IDS) submitted on September 2, 2004 was filed after the mailing date of the first office action on June 2, 2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application **should (MUST) include the following sections in order**. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) **BACKGROUND OF THE INVENTION.**
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) **BRIEF SUMMARY OF THE INVENTION.**

Art Unit: 3662

- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The specification is missing sections (e) and (f). The specification should (must) include the missing section. Each section above should be included in the specification of the application. In the instant application sections (e) and (f) are applicable. Therefore, these sections must be in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 32-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Russell et al. US006675094B2.

Referring to claim 32, Russell discloses in figures 1-3 a system for estimating a state of a target vehicle on a roadway, comprising:

- a. a road curvature estimation subsystem (see figure 3 [32]) for estimating a curvature of a roadway upon which a host vehicle is traveling;

Art Unit: 3662

b. a target state estimation subsystem operatively coupled to said host vehicle, wherein said target state estimation subsystem is adapted to track the target vehicle on the roadway (see figure 3 [30], range, range rate, angle, lateral velocity);

c. at least one processor operatively coupled to or a part of said road curvature estimation subsystem and said target state estimation subsystem, wherein said processor is adapted to determine if the target vehicle is likely traveling in a particular lane of the roadway, responsive to said curvature estimated by said road curvature estimation subsystem, and responsive to a measure of target kinematics from said target state estimation subsystem (see figure [38] and [40]).

Referring to claim 33, Russell discloses in figures 1-3 the road curvature estimation subsystem for estimating the curvature of the roadway comprises:

a. a speed sensor adapted to measure a longitudinal speed of said host vehicle on the roadway(see figure 3 [30]); and

b. a yaw rate sensor (see figure 3 [30]) adapted to measure a yaw rate of said host vehicle on the roadway, wherein said at least one processor is operatively coupled to said speed sensor and to said yaw rate sensor, and said processor is adapted to estimate a curvature of the roadway responsive to measurements from said speed sensor and from said yaw rate sensor (see figure 3 [32]).

Referring to claim 34, Russell discloses in figures 1-3 a target state estimation subsystem comprises a radar system operatively coupled to said host vehicle (figure 1 [14]).

Referring to claim 35. Russell discloses in figures 1-3 the processor comprises an extended Kalman filter adapted to estimate a measure of target kinematics responsive to

Art Unit: 3662

measures of range, range rate and azimuth angle of said target state estimation subsystem (see col. 5 lines 46-53).

Referring to claim 36. Russell discloses in figures 1-3 a measure of target kinematics comprises a measure of target position relative to a coordinate (host position vector) system of the host vehicle (see col. 5 lines 46-53).

Referring to claim 37. Russell discloses in figures 1-3 the measure of target kinematics further comprises a measure of target velocity relative to said coordinate system of the host vehicle (see col. 4 lines 29-37).

Allowable Subject Matter

Claims 7-28 are allowed.

Response to Arguments

Applicant's arguments filed September 2, 2004 have been fully considered but they are not persuasive. Applicant argues that Russell et al. does not disclose or suggest the determination of which of a plurality of lanes that the target vehicle is likely traveling, but instead provides for classifying each object as either in or out of the highway lane of the host vehicle. Applicant amended claim 32 to include the limitations "to determine in which of a plurality of lanes the target vehicle is likely traveling". Russell determines if the target vehicle ahead of the host vehicle is traveling in the same lane or not. On a road that has only two lanes (which reads on the claim language "plurality of lanes") Russell's system can detect if the target vehicle is on the

Art Unit: 3662

same lane or not (the other lane). Therefore, Russel does determine the claimed determination in which of a plurality of lanes the target vehicle is likely traveling (depending on the number of lanes).

Therefore, the rejections are maintained.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Franke et al. US 6,292,752 discloses a radar system including a lane recognition measurement data to sense the position of a target vehicle relative to the lanes (see Abstract, col. 2 lines 21-38).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 3662

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam A Alsomiri whose telephone number is 703-305-5702. The examiner can normally be reached on Monday-Thursday and every other Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isam Alsomiri



November 10, 2004



THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600